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# Mapping Best and Emerging Practices of Project Management

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## Abstract

This paper presents results of a study of the connection between Best and Emerging practices of project management. Drawing upon network mapping as an analytical strategy, cases of Best and Emerging practices is analysed and juxtaposed. The case of Best practice is represented by the newly published ISO 21500 standard and the case for the Emerging practices by a deconstruction of the practices of a group of experienced project managers. The network analysis reveals a substantial difference between the Best and Emerging practices. Only two central concepts were shared namely Communication and Planning. Of these two concepts Communication was found to be the most central to both the Emerging and Best practices. The analysis further reveals a soft side of project management that is central in the Emerging practice but absent from the Best practices. Although this soft side might be interpreted as a contextual bias it also represents avenues of further development of Best practices. Finally the study showed that network mapping is a promising approach for visualizing and interpreting project management practices. Furthermore it represents a tool with much broader areas of application within the study of project management and other phenomena.

## Keywords

project management, best practice, emerging practice, network mapping.

## **I. Introduction**

Project-based practices are witnessing an increasing popularity in today's society. As a consequence an increasing interest is shown by researchers into the field of project management and organizing. This has led to an extensive work from practitioners and academics striving for identification and formulation of robust theories of project management and organizing. This is exemplified in the strong focus on Best practice represented in standards like PMI, IPMA, Prince2 and lately also within the International Standardization Organization (ISO).

Common to the standards is that they are seeking to identify and isolate Best practices by which managers can design and implement optimal managerial practices. In this way they seek to identify universal and generic laws within project management and from that create tools for governing the different project processes.

Since the development of project management largely is driven by professional practitioners (PMI, IPMA, Prince2 and ISO) the concept of practice has always been central to the project management community. However the focus on standardization reveals a certain and underlying modernist perspective on practice which e.g.:

- views project management as a discipline with a well-defined body of knowledge and certification schemes for ensuring compliance to the standards
- have a strong focus on tools and methods (representing Best practices) which are independent of context and thereby transferable from one setting to another.
- views the project manager as the central driving force of the project.

In contrast to this modernist perspective some authors argue that the general scope and focus of project management research has been much too narrow (Söderlund, 2004). According to review of the literature by both Packendorff (1995) and Pinto (2002) the research suffers from almost an entire lack of empirical studies. In this way the dominating focus on normative and modernist perspectives on how project management “should” be practiced have downplayed the focus on understanding project management as a situated and emergent practice.

The request for more empirical oriented perspectives on practice can be seen as a part of the wider “practice turn” in management and organizational studies (e.g. Gherardi 2013, Nicolini 2012, Schatzki *et al.* 2001). This perspective – known as Practice Based Theory – places emphasis on understanding management and organizing through the unpredictable, embodied, and materially mediated, lifeworlds, of practitioners themselves, rather than through “Best practice” ideals, abstractions and rationalist models of human behaviour. Such a perspective:

- Views project management as an individual, social and material practice which is context dependent, dynamic and with a substantial tacit dimension
- Enables social and individual reflexivity towards the practice and development of project management.
- And is thus more concerned with Emergent practices rather than Best practices

This paper will study the connection between Best and Emergent practices of project management by developing an approach for studying and analysing practices of project management based on deconstruction and network visualization.

## **II Methodology**

The research has been conducted by applying network analysis on cases of Best and Emerging practices represented by a text analysis of a Best practice standard (ISO21500) and empirical material from a deconstruction exercise at a workshop for experienced project managers.

### **Network analysis**

Network analysis stems from the area of computer science and network science and is a part of the field graph theory. Network science operates in the interdisciplinary academic field of complex networks, such as telecommunication, computer or biological networks, just to mention a few. The United States National Research Council defines network science as “the study of network representations of physical, biological, and social phenomena leading to predictive models of these phenomena.” (Council & Committee , 2005)

There are numerous examples of networks: (Havlin, u.d.)

- The internet – where nodes represent computers and edges the connecting cables
- Social network – nodes represent people, and edges their relation
- Cellular network – nodes represent molecules, and edges their interaction

Graph theory is the study of graphs in mathematics and computer science. Graphs are the structures used to model pairwise relations between objects. In this study a graph consists of nodes and edges. Every edge has two endpoints in the set of nodes, to connect or join these two nodes. We operate with both directed edges and undirected. A directed edge symbolizes that there is a one-way connection between the two nodes. The undirected edge symbolizes that the connection between the nodes is two-way.

To analyse and visualize networks there are different software solutions available. In this study we have used Gephi which is an interactive visualization and exploration platform for all kinds of networks and complex systems, dynamic and hierarchical graphs. Even though it can handle large networks (i.e. over 20.000 nodes) it demands almost no computer power. (For more info visit “[gephi.org](http://gephi.org)”)

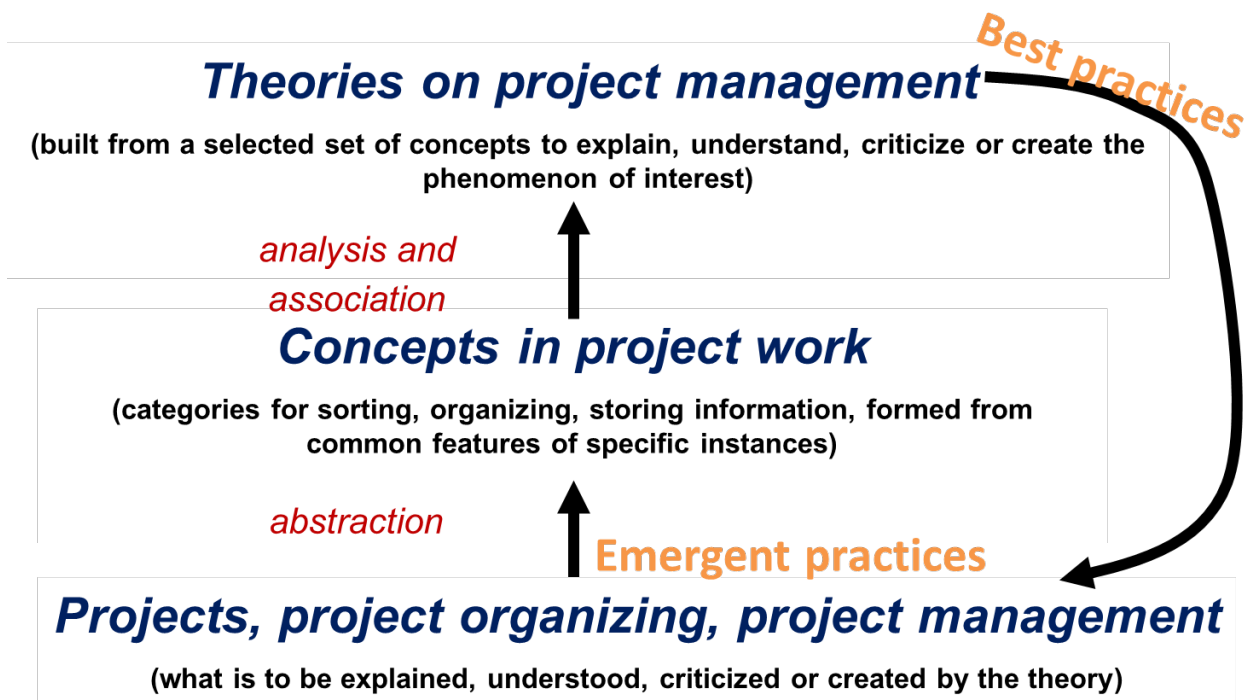
Gephi is a tool to explore and understand graphs and networks. “Like Photoshop but for data...” (www.gephi.org) the user can, with this tool, visualize networks and data in a new and interactive way. It complements traditional statistic tools with the possibilities to discover patterns or isolate structures in new ways.

The flexibility of Gephi makes it useable in a variety of settings like

- visualizing classical social networks through Facebook, twitter etc.
- mapping controversies between different stakeholders on certain topics using internet robots ([www.demoscience.org](http://www.demoscience.org)).

In this project Gephi is used to visualize and analyse cases of Best and Emerging practices of project management in order to identify similarities and differences.

In the development of the networks we draw upon Hatch & Cunliffes (2006) model for understanding organizational theorizing – illustrated in the following figure adapted to the field of project management.



Picture 1: Analytical strategy extracting concepts of project management (Inspired by Hatch & Cunliffes 2006)

In this study we consider the standards of Best practices as “Theories on project management”, which by the formulation and organization of “Concepts of project work” (like stakeholders and risk) develop approaches for understanding and managing project work. The Emergent practices are on the other hand not considered as theories but accounts of “Projects, project organizing and project management”. The analysis is realised by abstracting central concepts from the “Emerging practices” and juxtaposing these with Best practices concepts and their mutual relations.

### Case of Best practices of project management

As a representation of Best practice within project management numerous of standards exists formulated in different institutionalized and cultural settings and with different aims. Some of the most prominent examples are PMI, Prince2, IPMA and ISO 21500.

*PMI (Project Management Institute)* is an American organisation behind The Project Management Body of Knowledge (PMBoK) which is a project management method to be used in all projects. PMBoK contains a description of processes, tools and techniques that are “Best practice” which will help to a successful completion of projects. The term “Best practice” by PMBoK does not mean for tools and techniques to be used in all projects, on the contrary the project manager must for every project evaluate the tools and techniques needed in the specific project. The project management method of PMBoK consists of 5 process groups, 9 areas of knowledge and 42 processes.

*PRINCE2 (Projects In Controlled Environments)* was initially developed in 1989 as a UK Government standard for information systems and project management, and has developed to a generic project management method by 1996, and revised through the years to latest version of 2009. The governmental origin has influenced the scope of the standard. Thus PRINCE2 are focusing on documentation and flow of information as a way for controlling initially public and but increasingly also private projects.

*IPMA (International Project Management Association)* is a European organisation which since 1999 has defined the IPMA Competence Baseline ICB setting the standards and guidelines for project management in relation to experience, knowledge on method and behaviour. The ICB provides an official definition of the competences expected from project management personnel by the IPMA for certification using a four-levelled certification system. Professional project management by IPMA is broken down into 46 competence elements, which covers 20 technical elements, 15 behavioural elements and 11 elements of contextual competence, within project, programme and portfolio management.

*ISO 21500 - Guidance on Project Management*, is the result of 31 countries' ISO boards common understanding of efficient project management which were published in 2012 (ISO21500 2012). The ISO 21500 is highly inspired by the other standards of Best practice. The ISO21500 aims to introduce a standard for good project management which will increase efficiency and maximize the effect of investments, through the use of consistent project management terminology, universal project management principles and processes. Given the international collaboration around the standard, it can also be seen as a common platform for the other standards. Thus ISO 21500 are drawing heavily on the PMBOKs framework for the internal project processes and knowledge areas. According to Labriet (2013) the ISO 21500 standard is sharing 32 of 39 processes of project management with the PMBoK Guide (PMBoK, 2013). ISO21500 further is inspired by PRINCE2 in the modelling of the organizational context of the project, and finally are the competencies described by IPMA's three categories – the technical, behavioural and contextual competences.

Given ISO21500's ambition of formulating a platform for the other standards, we have chosen this as our case of Best practice in this study. Thus has ISO21500 been subject to a textual analysis and modelled in Gephi showing the relations between the central concepts in the standard.

### **Case of Emerging practice of project management**

The case the Emerging practices stems from a workshop where 18 project managers were asked to deconstruct their own project practices. The participating project managers at the workshop came from various disciplines such as research institutions, creative and cultural intuitions, consultancies, construction companies, architects, transport organization, municipalities and governmental organizations.... a rather diverse collection of backgrounds with different levels of experience.

Each project manager wrote Post-it's containing words describing what he/she found useful and important in their practice of engaging in projects. These Post-its was subsequent subject to a collective organizing process, identifying commonalities and differences. After the workshop all the Post-its were translated to English and written into a spreadsheet. The notes were categorized in accordance to the original categorization and then reviewed. In total 202 words (Post-its/nodes) were registered. With the offset in these words and inspired by Hatch (2006) thirteen general management concepts were abstracted representing core project management concepts.

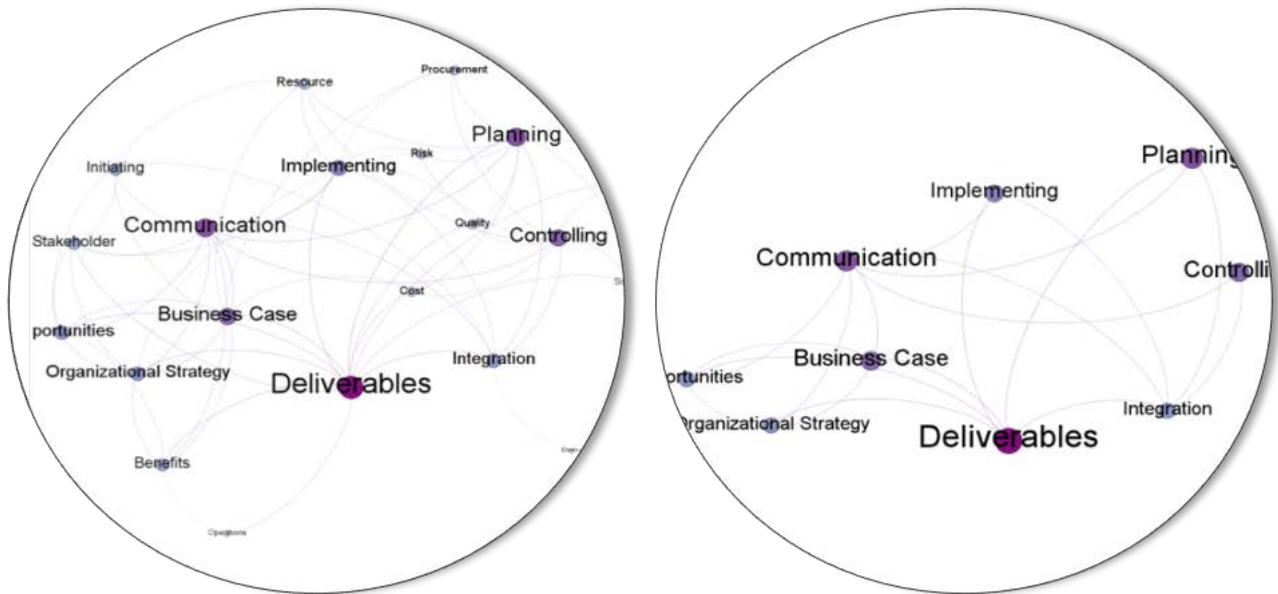
The excel sheet was subsequently imported in Gephi, where links between the central concepts and Post-its were established defining their mutual relationships. In the visualizing process force attraction has been used, meaning that nodes with more in common are located closer together. The resulting map defines and visualizes the dependencies between all the concepts of project management and their individual importance to the case of the Emerging practice.

## Results

We will now continue with the results of the network mapping of the cases of Best practice and Emergent practice.

### Best practices: The case of ISO21500

The network of ISO 21500 has been developed from the standard: “Guidance in project management” (ISO21500, 2012). The nodes and edges have been chosen according to their perceived significance when reading the standard. The ISO 21500 map shown in figure 2 consists of 21 nodes and 64 edges, each node representing a key concept or process of project management. The graph is undirected and the average degree is 6,095 edges per node. In order to simplify the analysis the picture to the right identifies the top nine nodes of the network.



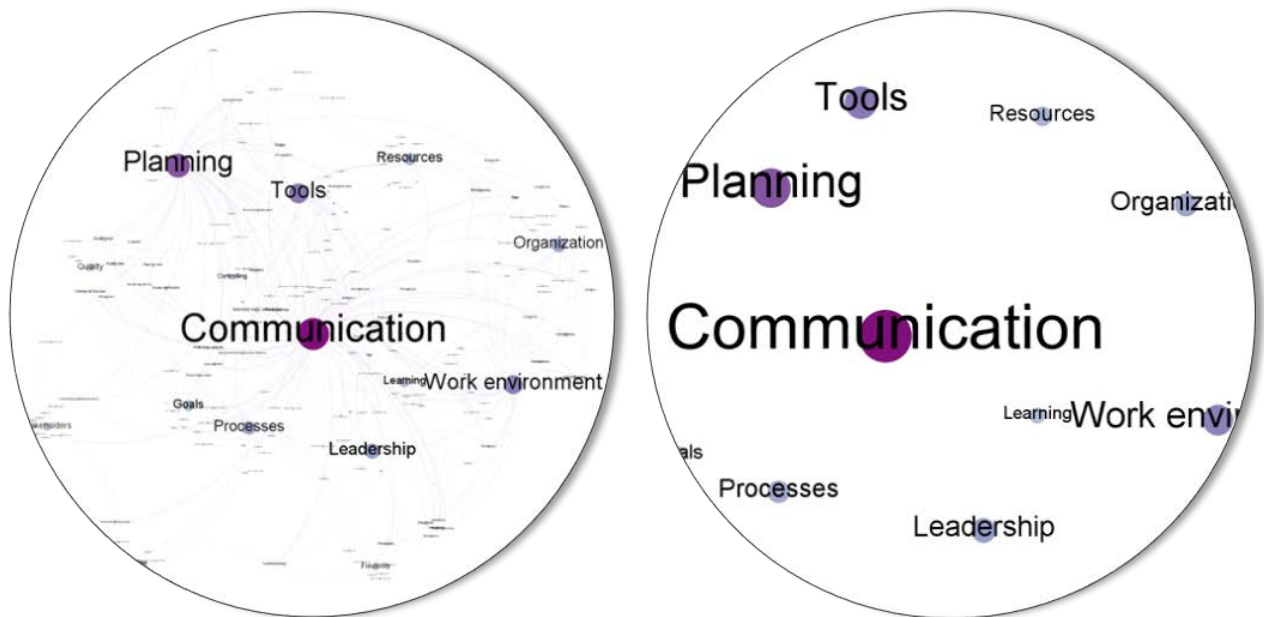
Picture 2: Full network of ISO 21500... and the top nine nodes

The largest node in the network is *Deliverables* with 13 edges in total. The second two largest nodes in the network are *Planning* and *Communication* with 10 edges each. This indicates that a project manager firstly has to have a strong focus on the *Deliverables* of the project and good competencies in the fields of *Planning* and *Communication*. While *Planning* is being a more technical competency *Communication* might be interpreted as a more behavioural or personal competency.

The fourth and fifth largest nodes with each 9 edges are *Controlling* and *Business Case* which are more technical and contextual. The sixth largest node with 8 edges are *Implementing* and the seventh-ninth largest nodes with each 7 edges are *Integration*, *Opportunities* and *Organisational Strategy*. In other words the ISO 21500 has a broad view on project management.

### The case of the Emerging practices

The network arising from the deconstruction of the project managers' practices is far more complex. The network consists of 202 nodes and 351 edges. The network is a mixed graph, meaning that it both has directed (one-way) and un-directed edges (two-way). Due to the vast number of nodes and edges the network is difficult to analyse visually, hence the creation of the figure to the right where the top ten nodes can be seen more clearly.



Picture 3: Network of emerging practices – full and top ten

The initial analysis of the network shows that the central categories in the map are *Communication*, *Planning*, *Tools* and *Work environment* where the *Communication* is exactly in the middle of the network. This category has the strongest relation to the Post-it's in the network. The next categories *Resources*, *Organization*, *Learning*, *Leadership*, *Processes* and *Goals* are also very close to the core categories while the categories of *Quality*, *Risk*, *Flexibility* and *Stakeholders* are situated further out. An interesting observation is that *Learning* and *Work environment* are highly related, as well as the *Goals* and *Processes*.

The picture shows that the largest node in the network is *Communication* with 58 edges, meaning that the 18 project managers spends most their time dealing with *Communication* in one way or the other.

The second largest node with 43 edges is *Planning* and the third largest is *Tools* with 35 edges. The fact that these two concepts ranks this high on the network could suggest that the source of the network – the group of project managers – includes a certain number of inexperienced or semi-experienced project managers as they tend to have planning and formal tools as core element in their practice.

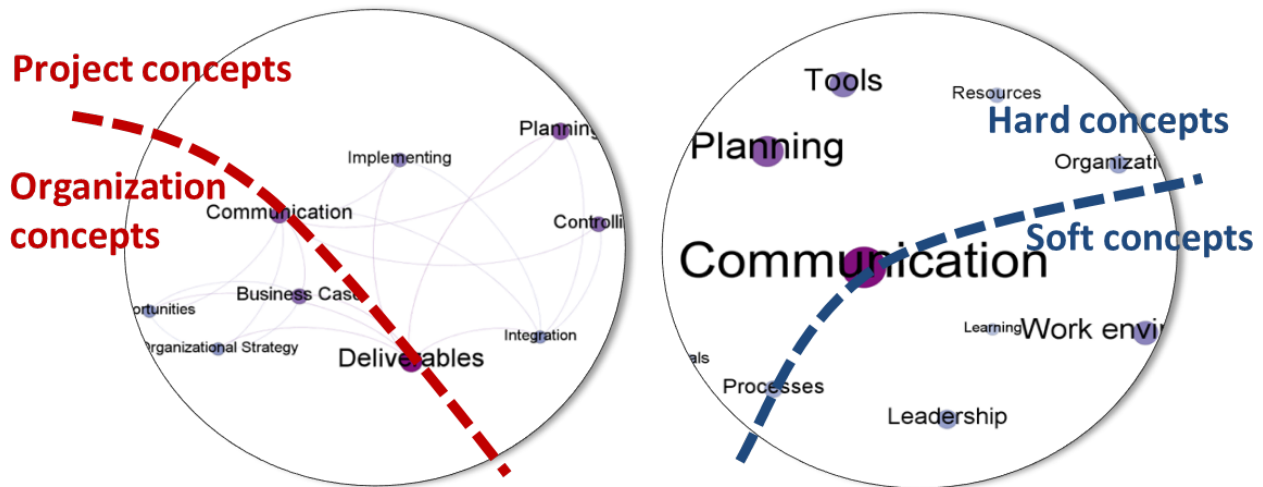
*Work environment* covers the nursing of the project team. Examples could be; remember to bring cake to group meetings or buying ice on a particular hot day where the project team is forced to work late. It could also be to make sure, that one is able to leave early on the day of his daughters dance recital. A good *Work environment* suggests that people will dedicate them to the project objectives.

Top 10: Communication 58, Planning 43, Tools 35, Work environment 33, Leadership 26, Organization 24, Processes 23, Resources 20, Goals 17, Learning 16



## Juxtaposing Best and Emerging practices

Comparing the two networks of the Best and Emerging practices highlights several learning points.



Picture 4: Top nodes of ISO 21500 map and the map of the emerging practice

Initially one might be struck by the differences of the maps. Beside a very few concepts like Planning and Communication they don't share any other central concepts. There might be several reasons for this one being that the maps represent different perspectives.

### Project and organizational concepts

As the map of the Emerging practices is formulated based on project managers own experiences it represents tools and practices for managing the internal life of projects. Compared to this the ISO standard extend the focus of the internal life of the project with an external focus highlighting the organizational context of the project. This is seen in the visibility of the ISO concepts *Deliverables*, *Business case* and *Opportunities*. The boundary between the internal and external themes is illustrated in figure by the red-dotted line placing *Communication* and *Deliverables* as core shared concepts. The centrality of *Communication* and *Deliverables* seems obvious as they represent links between the project and the organizational context where the *Deliverables* represent the direct outcome of the project and *Communication* as the concept which ensures the continuous coordination of the delivery process.

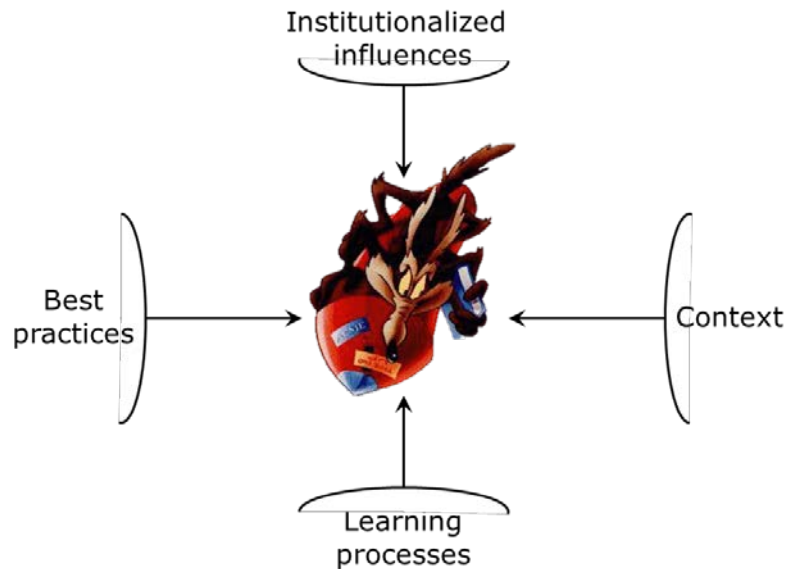
### Hard and soft side of project management

While the broader organizational context seems absent from the Emerging practice, the map of the Emerging practices introduces another important aspect: *The soft side of project management*. This is seen in the visibility of the concepts *Work environment*, *Leadership* and *Learning*. The boundary between the hard and the soft concepts is illustrated in figure by the blue-dotted line placing *Communication* and *Processes* as core shared concepts. This also seems reasonable as *Communication* is essential for both classical reporting practices (hard) and motivational practices (soft) and in line with this argument *Processes* both represent classical process mapping (hard) and processes which encompass facilitation of project work (soft). While the soft side represents a substantial part of the Emerging practices of project management it is absent in ISOs representation of Best practices of project management. This suggests that the Emerging practices are influenced by more than just Best practices.

## Discussion

### Reflections – context matters

The discrepancies between the Emerging and Best practices suggest that the modernist perspective on practice has its limitations. We cannot reduce project management to simple straight forward guidelines as the Emerging practices seems highly context dependent, dynamic and with a substantial element of improvisation. In order to understand this process we suggest a re-reading of the figure provide by Christensen & Kreiner (1991).



Picture 5: The influences of Emerging practices

As the figure shows the Emerging practices (at the center) should be found in the intersection between Best practices, Context, Institutional influences and Learning processes. While the Best practices might inform certain parts of the Emergent practices, the context also is a major influence. This context might be the specific context of the project but also the broader societal context represented by the institutional influences.

The figure helps us to shed light on the background for the discrepancies between the Best and Emerging practices. The institutional and local context of the projects influences the selection of strategies for managing the projects in the Emerging practices. The developed strategies might draw upon the Best practice tools and methods, but Best practices do not represent the only source. This become especially apparent in the soft concepts where “Women’s charm”, “Persuasion”, “Beer drinking” and “Cake baking” are applied in the process of managing the projects. In fact the diversity of the group encompassing both certified and self-thought project managers suggests that some of them didn’t even use some of the basic Best practice tools. Moreover with some of these strategies it appears that the practice of project management requires the investment of the personality of each individual project manager. Thus a project management practice might be described as an improvisation where project manager invest his/her competences and personality in the situated performance of the project. This improvisation adds a learning dimension to development of the Emerging practices. Through improvisation the project manager will experience what works and doesn’t work in the specific contexts. These experiences will not take the form of formal learning processes, but will be an embodied and tacit dimension of the practice.

Given Practice based theory's embracement of the tacit and dynamic dimension of practice, it becomes in our view a promising strategy for studying and developing practices of project management.

### **The role and relevance of best practice**

Another question which arises given the discrepancies is the role and relevance Best practices in project management. On the platform of scientific management Best practices originally has been instrumentalised ways of working – omitting the role of context. This all for good reasons since the context here was stable, well-known and thereby un-influential and irrelevant. However the role context has in the postmodern world changed dramatically. Thus project managers today are faced with a substantial amount of uncertainty, complexity and ambiguity.

This has influenced the way Best practice of project management is articulated. Thus Best practices are today acknowledging the role of the context. As an example PMI and ISO are specifically mentioning that the processes of project management should be tailored to each individual project. Another example is IPMA's specification of a set of project management competences related to the management of context of the project.

The discrepancies further question the relevance of the standards. This particular seems important given the wide variety of soft management tools and strategies which are integrated in the Emerging practices but absent from the Best practices. One could argue that the reason why the soft concepts isn't integrated in the standard is because it relates to the cultural context of the project. Even though this is a valid interpretation it might be unfruitful just to categorise the differences as contextual bias since some of the differences also have the possibility of informing future practices of project management. In this way network mapping highlights potential areas of upcoming Best practice – next practices.

### **Perspectives with network mapping**

Reflecting on the developed methodology in this paper, the perspectives of using network analytical tools like Gephi in the study of project management are numerous:

1. First of all shows the analysis how it is possible to visualize emergent practices of project management in a way which can be subject to close examinations abstracting central concepts of project management and their internal relations.
2. Secondly it is applicable in the study of best practices like the ISO 21500, PMBoK, PRINCE2 and IPMA, potentially identifying overlap (similarities and differences) between standards.
3. Furthermore it might be used as a strategy for identifying overlap (similarities and differences) between the standards and actual practices.
4. Finally it might be used for identifying new areas of research, mapping current and past research.

Besides these applications, Gephi also enables researchers to establish dynamic maps by the use of web-crawlers. Thus an application could be to analyse the discourses of project management around different central organizations like Prince2, PMI, IPMA and ISO. Such analysis could also illustrate the historical development of these organizations and their relations.

## Conclusion

The ambition of this preliminary research has been to study the connection between Best and Emerging practices of project management by developing an approach for studying and analysing practices of project management based on deconstruction and network visualization.

Drawing upon network mapping as an analytical strategy two case of Best and Emergent practices has been analysed and juxtaposed. The case of Best practice was represented by the newly published ISO 21500 standard and the case of the Emerging practice by a deconstruction of the practices by 18 experienced project managers. The result show:

- There are substantial differences between Best and Emerging practices. Only two central concepts were shared namely Communication and Planning.
- Communication where in both cases placed in the center of the maps illustrating the centrality of the concept in project management.
- A soft side of project management is further revealed as central in the Emerging practice but absent from the Best practices. Although the soft side might be interpreted as contextual bias it also represents avenues of further development of new Best practices.

Finally have the study showed, that network mapping is a promising approach for visualizing and interpreting project management practices. Furthermore network mapping represents a tool with much broader areas of application within the study of project management.

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